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09/823,103	03/30/2001	Vassil Iordanov	2028068-0021	8391

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SCHNADER HARRISON SEGAL & LEWIS, LLP  
1600 MARKET STREET  
SUITE 3600  
PHILADELPHIA, PA 19103

EXAMINER
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JONES, HUGH M

ART UNIT	PAPER NUMBER
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2128

MAIL DATE	DELIVERY MODE
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12/14/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

**Application No.**

09/823,103

**Applicant(s)**

IORDANOV ET AL.

**Examiner**

Hugh Jones

**Art Unit**

2128

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 06 March 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
- Paper No(s)/Mail Date 3/6/2007.

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

1. Claims 1-29 of U. S. Application 09/823,103, filed 03/30/2001 are presented for examination.

2. Applicant's response to the 1.105 requirement for information is considered sufficient and the holding of non-responsive reply to the requirement is withdrawn.

However, this application is made non-final in order to apply new 102 and 101 rejections.

**Claim Rejections - 35 USC § 101**

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. **Claims 1-29 are rejected under 35 U.S.C. 101 as being directed to nonstatutory subject matter since the claims as a whole do not provide for a practical application, as evidenced by lack of physical transformation or a useful, tangible, and concrete result.**

5. Patents may not be granted on ideas in and of themselves. While claims drawn to practical applications may be patentable, claims drawn to *thinking about practical applications or directed to practical applications* of thinking are not patentable. Claims drawn to the simulation of practical applications may be patentable, but the simulation of ideas *per se* (abstract or otherwise) - human intelligence itself – *with or without a practical application* - is not patentable. See claim 1, for example:

Art Unit: 2128

I. A method of simulating human behavior for interacting with environment, comprising:

- defining resources that simulate the human behavior based upon resource definitions, said resource definitions defining at least cognition, sensory, motor and metacognition based upon attributes;
- representing certain internal aspects of said resources in symbolic knowledge;
- storing said symbolic knowledge in a predetermined metacognitive memory;
- updating said symbolic knowledge for each of said resources in response to any change that is related to said resources; and
- managing said resources for at least one cognitive task based upon said symbolic knowledge.

The courts have addressed the issue.

"The Supreme Court has reviewed process patents reciting algorithms or abstract concepts in claims directed to industrial processes. In that context, the Supreme Court has held that a claim reciting an algorithm or abstract idea can state statutory subject matter only if, as employed in the process, it is embodied in, operates on, transforms, or otherwise involves another class of statutory subject matter, i.e., a machine, manufacture, or composition of matter. 35 U.S.C. § 101. " In re Comiskey (CAFC 2006-1286) at 17.

"However, mental processes—or processes of human thinking—standing alone are not patentable even if they have practical application. The Supreme Court has stated that "[p]henomena of nature, though just discovered, mental processes, and abstract intellectual concepts are not patentable, as they are the basic tools of scientific and technological work." Benson, 409 U.S. at 67 (emphasis added). In Flook the patentee argued that his claims did not seek to patent an abstract idea (an algorithm) because they were limited to a practical application of that idea—updating "alarm limits" for catalytic chemical conversion of hydrocarbons. 437 U.S. at 586, 589-90. The Court rejected the notion that mere recitation of a practical application of an abstract idea makes it patentable, concluding that "[a] competent draftsman could attach some form of post-solution activity to almost any mathematical formula." Id. at 590. Since all other features of the

Art Unit: 2128

process were well-known, including "the use of computers for 'automatic monitoring-alarming,'" the Court construed the application as "simply provid[ing] a new and presumably better method for calculating alarm limit values." Id. at 594-95." See Comiskey at 19.

The Court held the application unpatentable because "if a claim [as a whole] is directed essentially to a method of calculating, using a mathematical formula, even if the solution is for a specific purpose, the claimed method is nonstatutory." 437 U.S. at 595 (quoting In re Richman, 563 F.2d 1026, 1030 (CCPA 1977)). See Comiskey at 20.

"Following the lead of the Supreme Court, this court and our predecessor court have refused to find processes patentable when they merely claimed a mental process standing alone and untied to another category of statutory subject matter even when a practical application was claimed." See Comiskey at 20.

"Decisions of our predecessor court are in accord. In re Meyer, 688 F.2d 789, 796 (CCPA 1982), held that "a mental process that a neurologist should follow" was not patentable because it was "not limited to any otherwise statutory process, machine, manufacture, or composition of matter." Id. at 795." See Comiskey at 21.

"Thus, like the claims that the Supreme Court found unpatentable in Benson and Flook and the claims found unpatentable in our own cases, Comiskey's independent claims 1 and 32 seek to patent the use of human intelligence in and of itself. Like the efforts to patent "a novel way of conducting auctions" which Schrader found to be directed to an abstract idea itself rather than a statutory category, Comiskey's independent claims 1 and 32 describe an allegedly novel way of requiring and conducting arbitration and are unpatentable. See Schrader, 22 F.3d at 291." See Comiskey at 22.

"In other words, the patent statute does not allow patents on particular systems that depend for their operation on human intelligence alone, a field of endeavor that both the framers and Congress intended to be beyond the reach of patentable subject matter. Thus, it is established that the application of human intelligence to the solution of practical problems is not in and of itself patentable." See Comiskey at 21.

6. More generally, the claims appear to be directed to the basic tools of the scientific method itself. "Phenomena of nature, though just discovered, mental processes, abstract intellectual concepts are not patentable, as they are the basic

**tools of scientific and technological work.**" *Benson*, 409 U.S. at 67, 175 USPQ at 675. "Abstract ideas" refer to *disembodied plans, schemes*, theoretical methods. -Id. at 1404. "Abstract ideas" can represent a discovery of a "law of nature" or a "physical phenomenon" or a man-made invention." *Ex parte Bilski* at 20

7. The claims are directed to modeling human behavior/thinking, which is the purview of the observational sciences, i.e., experimental psychology, experimental social psychology.

8. Experimental psychology is defined as:

The study of the mind by experiment: the branch of psychology that studies the basic mechanisms of the mind, e.g. perception, thinking, learning, and memory, often using experiments with individuals in controlled situations (Encarta® World English Dictionary [North American Edition] © & (P)2007 Microsoft Corporation.)

9. More generally, the *scientific method* is

a body of techniques for investigating phenomena and acquiring new knowledge, as well as for correcting and integrating previous knowledge. It is based on gathering observable, empirical, measurable evidence, subject to specific principles of reasoning.

(Isaac Newton (1687, 1713, 1726). "[4] Rules for the study of natural philosophy", *Philosophiae Naturalis Principia Mathematica*, Third edition. The General Scholium containing the 4 rules follows Book 3, *The System of the World*. Reprinted on pages 794-796 of I. Bernard Cohen and Anne Whitman's 1999 translation, University of California Press ISBN 0-520-08817-4, 974 pages.)

10. The Supreme Court in **Lab Corp. v. Metabolite**, 548 U.S. \_\_\_\_ (2006), has also addressed these issues in their recent dissent:

"Even were I to assume (purely for argument's sake) that claim 13 meets certain general definitions of process patentability, however, it still fails the one at issue here: the requirement that it not amount to a simple natural correlation, i.e., a "natural phenomenon." See *Flook*, supra, at 588, n. 9 (even assuming patent for improved catalytic converter system meets broad statutory definition of patentable "process," it is invalid under natural phenomenon doctrine); *Diehr*, 450 U. S., at 184-185

Art Unit: 2128

(explaining that, even if patent meets all other requirements, it must meet the natural phenomena requirement as well).

At most, respondents have simply described the natural law at issue in the abstract patent language of a "process." But they cannot avoid the fact that the process is no more than an instruction to read some numbers in light of medical knowledge. Cf. *id.*, at 192 (warning against "allow[ing] a competent draftsman to evade the recognized limitations on the type of subject matter eligible for patent protection"). One might, of course, reduce the "process" to a series of steps, e.g., Step 1: gather data; Step 2: read a number; Step 3: compare the number with the norm; Step 4: act accordingly. But one can reduce any process to a series of steps. The question is what those steps embody. And here, aside from the unpatented test, they embody only the correlation between homocysteine and vitamin deficiency that the researchers uncovered. In my view, that correlation is an unpatentable "natural phenomenon," and I can find nothing in claim 13 that adds anything more of significance."

**Lab Corp. v. Metabolite**, 548 U.S. \_\_\_\_ (2006), at 13-14.

11. Furthermore, claims 26-29 are directed to *software per se*, and as such are not statutory for the same reasons, namely that they are drawn to abstract ideas.

26. A computer program for providing real-time adaptive decision support, comprising:

a predetermined set of resources for accomplishing a set of predetermined tasks,

a cognitive module connected to said resources for executing at least one of the tasks,  
said cognitive module further including a cognitive scheduler, the task being defined by a task control declaration and being managed by said cognitive scheduler; and

a metacognitive module operationally connected to said cognitive module and having a metacognition process control module, a metacognition memory and a metacognition scheduler, in response to said cognitive module said metacognitive module updating symbolic information on self-awareness of said resources in said metacognition memory in response to any change that is related to said resources, said metacognition process control

module reordering the tasks in said cognitive scheduler based upon said symbolic information and said metacognitive scheduler module.

12. See MPEP 2106.01 (I):

Art Unit: 2128

Since a computer program is merely a set of instructions capable of being executed by a computer, the computer program itself is not a process and USPTO personnel should treat a claim for a computer program, without the computer-readable medium needed to realize the computer program's functionality, as *nonstatutory functional descriptive material*.

13. See page 53 of the interim guidelines:

...computer programs claimed as computer listings per se, i.e., the descriptions or expressions of the programs, are not physical "things." They are neither computer components nor statutory processes, as they are not "acts" being performed. Such claimed computer programs do not define any structural and functional interrelationships between the computer program and other claimed elements of a computer which permit the computer program's functionality to be realized. In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See Lowry, 32 F.3d at 1583-84, 32 USPQ2d at 1035. Accordingly, it is important to distinguish claims that define descriptive material per se from claims that define statutory inventions.

14. MPEP 2163 provides guidance for examining claims:

**1. For Each Claim, Determine What the Claim as a Whole Covers:** Claim construction is an essential part of the examination process. Each claim must be separately analyzed and given its broadest reasonable interpretation in light of and consistent with the written description. See, e.g., *In re Morris*, 127 F.3d 1048, 1053-54, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997). The entire claim must be considered, including the preamble language and the transitional phrase. "Preamble language" is that language in a claim appearing before the transitional phrase, e.g., before "comprising," "consisting essentially of," or "consisting of."

and

The examiner should evaluate each claim to determine if sufficient structures, acts, or functions are recited to make clear the scope and meaning of the claim, including the weight to be given the preamble. See, e.g., *Bell Communications Research, Inc. v. Vitalink Communications Corp.*, 55 F.3d 615, 620, 34 USPQ2d 1816, 1820 (Fed. Cir. 1995) ("[A] claim preamble has the import that the claim as a whole suggests for it."); *Corning Glass Works v. Sumitomo Elec. U.S.A., Inc.*, 868 F.2d 1251, 1257, 9 USPQ2d 1962, 1966 (Fed. Cir. 1989) (*The determination of whether preamble recitations are structural limitations can be resolved only on review of the entirety of*



the application "to gain an understanding of what the inventors actually invented and intended to encompass by the claim.").

Furthermore,

"If the claim preamble, when read in the context of the entire claim, recites limitations of the claim, or, if the claim preamble is 'necessary to give life, meaning, and vitality' to the claim, then the claim preamble should be construed as if in the balance of the claim." *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1305, 51 USPQ2d 1161, 1165-66 (Fed. Cir. 1999). See also *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951) and *Catalina Marketing International, Inc. v. Coolsavings.com, Inc.*, 1524.

See also *de Castelet*, 562 F.2d at 1244, 195 USPQ at 447 ("Claims to nonstatutory processes do not automatically and invariably become patentable upon incorporation of reference to apparatus").

15. It is also noted that "metacognition memory" does not refer to hardware.

### ***Claim Rejections - 35 USC § 102***

16. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

17. Claims 1-29 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Le Mentec et al. (REPRESENTING HUMAN SENSORY AND MOTOR ACTION BEHAVIOR IN A COGNITIVE MODELING ARCHITECTURE).

18. Le Mentec et al. disclose Cognet:

The second page discloses:

"COGNET (Cognition as a Network of Tasks) is a framework for building models of human operators in specific real-time multi-tasking domains [6]. It has proven highly useful in analyzing complex work domains such as air traffic control [7], telephone

operations [8], and most recent in the Advanced Embedded Training System (AETS) [9]. The AETS is a large simulation-based intelligent tutoring system that works in combination with an embedded mission simulation capability. In AETS, COGNET and iGEN™ were used to develop keystroke-level cognitive models of human workstation operators engaged in an air-defense problem as carried out in a command and control center on a US Navy destroyer. AETS, developed jointly with Lockheed Martin for the US Navy, is intended to provide team training for a team of watch officers using their operational watchstations in a 'wargame simulation' mode. COGNET and iGEN™ are based on a theoretical model of human information processing. This model posits a specific organization of information processing resources or mechanisms, and a corresponding organization of knowledge for execution by those mechanisms. The information processing mechanisms and their architectural relationships are summarized in Figure 1. Each of these essentially parallel processes (sensory/perception, cognition, and motor action) operates according to well-defined principles. These principles of operation then define the kinds and structure of knowledge that is used by each component. The knowledge representation is detailed in [10]. In summary, there are four separate types of knowledge used by the four architectural components in Figure 1. The first knowledge type is procedural knowledge, which is organized into complex chunks that are activated as a unit, and are executed by the cognitive processor. These chunks, called cognitive tasks, are structured as a hierarchy of goals and sub-goals, using a notation related to the GOMS notation [2]. The second knowledge type is a declarative knowledge representation of the domain and problem context. This declarative knowledge is maintained in the extended working memory, and is accessible to all the cognitive tasks via the cognitive processor, which can both access (i.e., read) and modify the declarative knowledge in the extended working memory. This declarative knowledge is represented in COGNET as a multipanel blackboard structure, e.g. as described in [11], which is hierarchically organized into panels and levels, which contain individual symbolically represented facts (termed 'hypotheses') with specific attributes and attribute values. Additionally, hypotheses can be semantically or episodically related in more ad hoc ways by link relationships.

**Page 5 discloses:**

"To support the flexible resources concept, a metacognition blackboard is provided to store the status of the resources (the metacognition blackboard also has other usages that are not discussed in this paper). This blackboard is used by the action functions to reserve the required resources. When requesting an action, the cognition layer must check the availability of the needed resource, and possibly decide, if it is already in use, if it wants to wait for the resource or try to use other resources to perform the action. Resources can also be accessed by the perception function. The most obvious case, as we discussed above, is an eye resource. A hand resource would also be necessary to perceive tactile sensations."

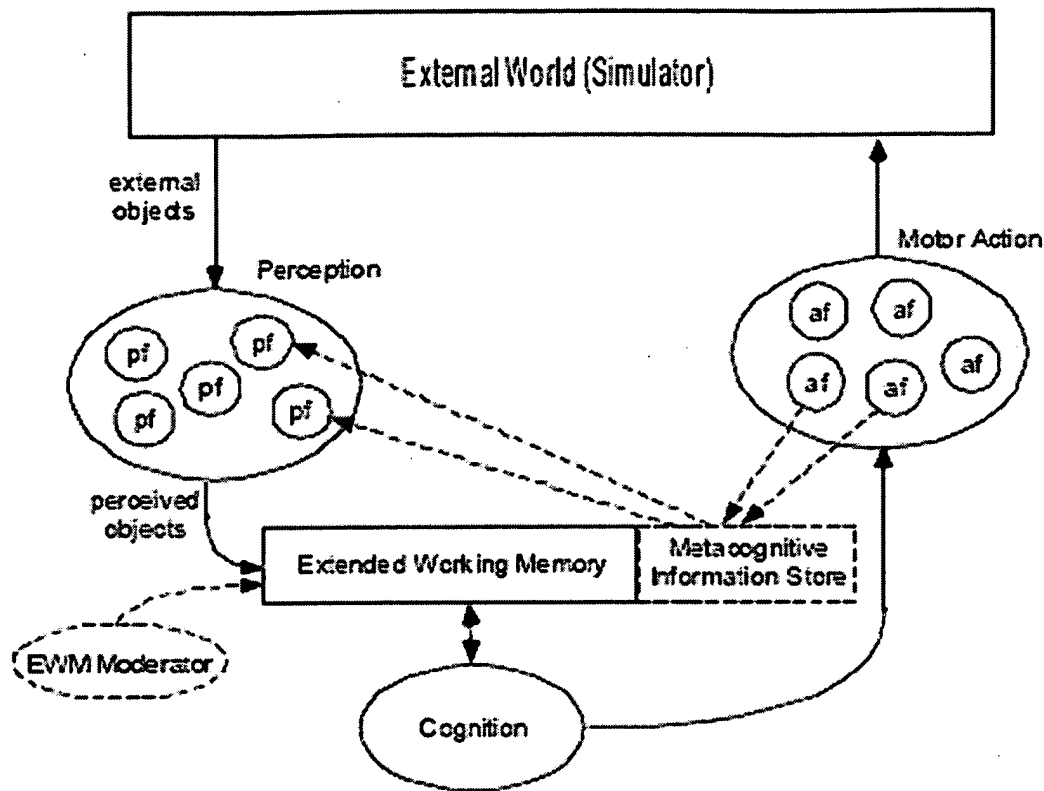


Figure 2. The new COGNET architecture with the perception and action mechanism

(col. 2, page 2)

the extended working memory. This declarative knowledge is represented in COGNET as a multi-panel blackboard structure, e.g. as described in [11], which is hierarchically organized into panels and levels, which contain individual **symbolically** represented facts (termed 'hypotheses') with specific attributes and attribute values. Additionally, hypotheses can be semantically or episodically related in more ad hoc ways by link relationships.

(col.2, page 5):

To support the flexible resources concept, a metacognition blackboard is provided to store the status of the resources (the metacognition blackboard also has other usages that are not discussed in this paper). This blackboard is used by the action functions to reserve the required resources. When requesting an action, the cognition layer must check the availability of the needed resource, and possibly decide, if it is already in use, if it wants to wait for the resource or try to use other resources to perform the action. Resources can also be accessed by the perception function. The most obvious case, as we discussed above, is an eye resource. A hand resource would also be necessary to perceive tactile sensations.

### **Response to Arguments**

19. Applicant's arguments filed 3/6/2007, have been carefully reviewed, but are not persuasive.
20. The questions regarding inventorship, declarations, and prior art rejections are moot in view of the new prior art rejections. Applicants are thanked for their reply.

### **Conclusion**

21. The prior art made of record and not relied upon because it is cumulative is considered pertinent to applicant's disclosure:

Zachary et al. disclose: INTERFACE AGENTS IN COMPLEX SYSTEMS. See:

Art Unit: 2128

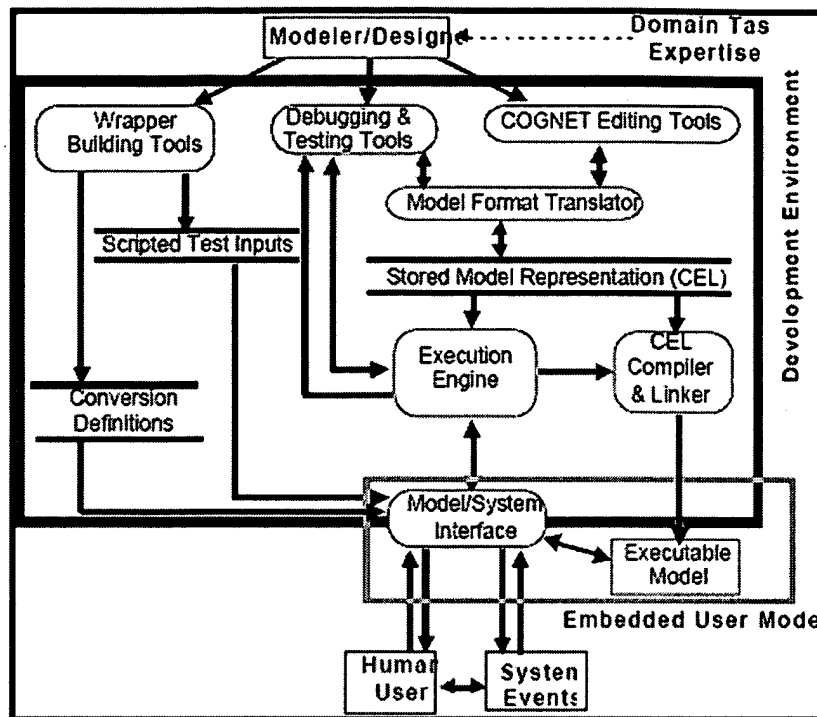


Figure 3. A Generator of Interface Agents

page 6:

The Trigger Evaluation process constantly monitors the blackboard contents to determine the tasks in the underlying COGNET model whose Task Trigger patterns (i.e., enabling conditions) are satisfied. As Task Trigger patterns are satisfied by the current problem context on the blackboard, the tasks are activated and allowed to compete for attention. The Trigger Evaluator considers both the permanent trigger patterns associated with the model tasks, and the 'temporary' triggers created by tasks that have suspended themselves while waiting for some future event or problem context.

It is axiomatic in COGNET that the person is always performing one and only one cognitive task at any given time. The Attention Focus Manager operates in parallel to this task performance process, determining if and when an activated task that does NOT have the current focus of attention is able to capture that focus from the currently executing task. This is essentially a Pandemonium model of attention, as originally proposed in the early writing of Selfridge (1959). The activated tasks have a certain priority for execution, which itself can be context sensitive (i.e., dependent on the blackboard contents). The Attention Focus Manager constantly compares this priority against that of the task which currently has the focus of attention. Any time an activated task exceeds the level of the currently executing task, the Attention Manager sends a message to the Task Execution process informing it to begin (or resume) executing the task which has now captured the focus of attention. The previously executing task now becomes an interrupted task, and is suspended, in its present state of completion, until it is able to again regain the focus of attention.

When a task is interrupted, its current state of execution is saved in anticipation of the task later regaining the focus of attention. The task state that is saved is a pointer to the location in the goal/subgoal/operator hierarchy to where execution had proceeded, along with relevant information about the problem context at the time of interruption. This context is important because the lapse of time until the task regains the focus of attention is indeterminate, and some higher level decision may have to be made as to how the resumption of the task is to be undertaken. The execution may have to be reinitiated at the beginning, or at some intermediate subgoal, or the performance may have to be adjusted based on the changes in problem context since the task was interrupted. These are megacognitive processes, and will be handled by the Metacognition Manager.

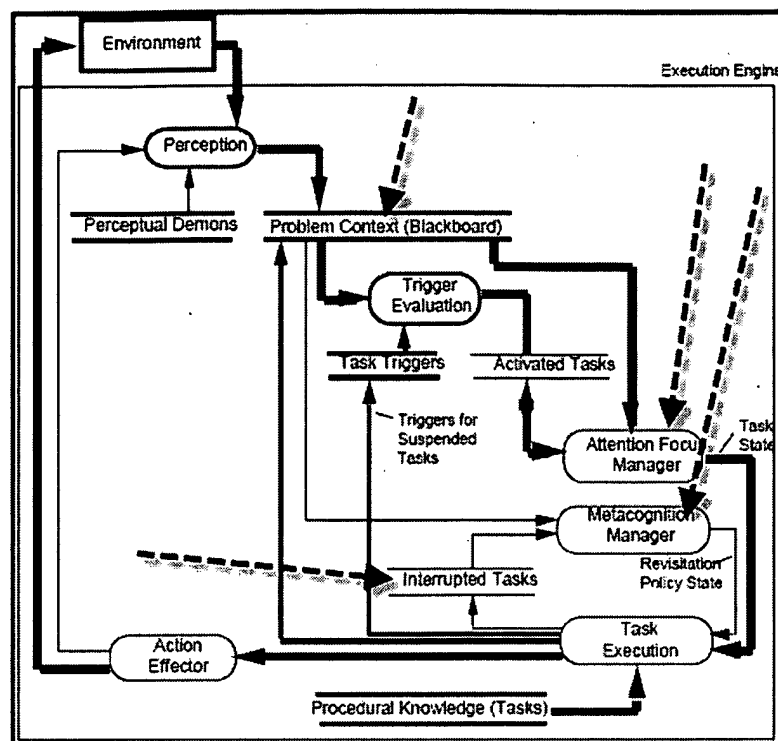


Figure 2. Execution Engine Architecture

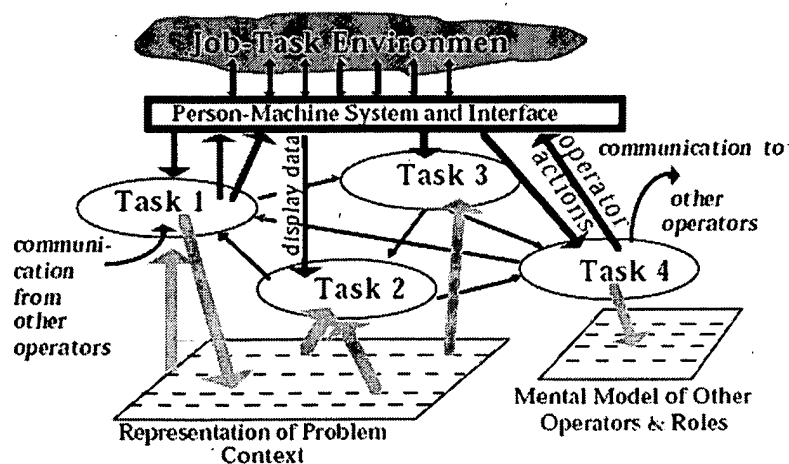


Figure 1. COGNET Theoretical Framework

- a priority notation for describing how conflicting demands for attention are resolved when two or more tasks simultaneously demand attention. The underlying attention process is the Pandemonium process initially described by Selfridge (1959).

Art Unit: 2128

resources. When requesting an action, the cognition layer must check the availability of the needed resource, and possibly decide, if it is already in use, if it wants to wait for the resource or try to use other resources to perform the action. Resources can also be accessed by the perception function. The most obvious case, as we discussed above, is an eye resource. A hand resource would also be necessary to perceive tactile sensations.

state of the problem, making the tasks very context-dependent. For example, the way in which a supervisor reconfigures an assembly line may depend on which specific workers are on the line, what skills they have, and the repair status of all the available machines.

As procedures (as opposed to atomic actions or individual inferences), these high level cognitive tasks will typically involve a substantial sequence of behaviors, performed over some period of time. However, tasks may interrupt one another, and a given task may be interrupted and resumed several times as the person/team copes with the on-going sequence of real-time events in the external problem environment.

Although the tasks may compete for attention, they ultimately work together in the aggregate to solve the overall problem-instance. What unites these separate chunks of procedural knowledge into a global problem-solving strategy is their use of a common problem representation. This problem representation is declarative. It provides the problem-context information on which attention demands are mediated and task-performance is adapted. As a given activity is performed, the person gains knowledge about and/or makes inferences about the overall problem situation, and incorporates this information back into the problem representation. However, as the problem representation evolves, its changing contents can modify the relative priority among the activities competing for attention, allowing a new activity to capture the focus of attention. Much of the information about the problem is also gained directly from perceptual processes. COGNET allows individual problem solvers to cooperate, through communication and coordination activities, to achieve a common high-level goal. Any person/agent may communicate with other agents in its environment, and use the structure of the communication process both to enhance communication and to organize its own problem solving activity. The overall COGNET framework is pictured in Figure 1. This cooperative process often requires an internal representation of the team relationships and responsibilities, in addition to the representation of the problem being solved.

The framework in Figure 1 integrates sensory/perceptual, cognitive, and motor level phenomena, and communicative/interactional phenomena as well. When it is applied to given problem domain, COGNET also provides a framework for building a complete description of the way in which experts perform in that domain. The components of the description language are:

- a notation to describe the representation of the current problem instance, including elements of its evolution and present inferred state. This notation is a generalized, multi-panel blackboard structure (see Nii, 1986a,b, or Englemore & Morgan, 1988), and its content is termed the Mental Model of the current problem situation;
- a notation for describing the information processing and associated person-machine interaction associated with each high-level cognitive task the person may perform. This notation is derived from the GOMS notation (Card et al., 1983; Olson & Olson, 1990), but includes extensions that allow for accessing and creating information in the problem representation (blackboard). Other extensions allow for the interruption, suspension, and subrogation of the current task to other tasks. Each Cognitive Task and is activated by a triggering condition that is based on specific patterns in the Mental Model blackboard;
- a production rule notation for describing the processes by which information, once registered by the user's senses, is perceived and introduced into the current representation of the problem (i.e., blackboard). These independent processes are called Perceptual Demons. As in Card Moran and Newell's Model Human Processor (1983) or Newell's SOAR (1990), these perceptual processes operate in parallel to the cognitive processes which carry out the cognitive tasks, and to the motor processes which executes atomic behaviors;

**22. Any inquiry concerning this communication or earlier communications from the examiner should be:**

directed to: Dr. Hugh Jones telephone number (571) 272-3781,  
Monday-Thursday 0830 to 0700 ET,

**or**

the examiner's supervisor, Kamini Shah, telephone number (571) 272-2279.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist, telephone number (703) 305-3900.

**mailed to:**

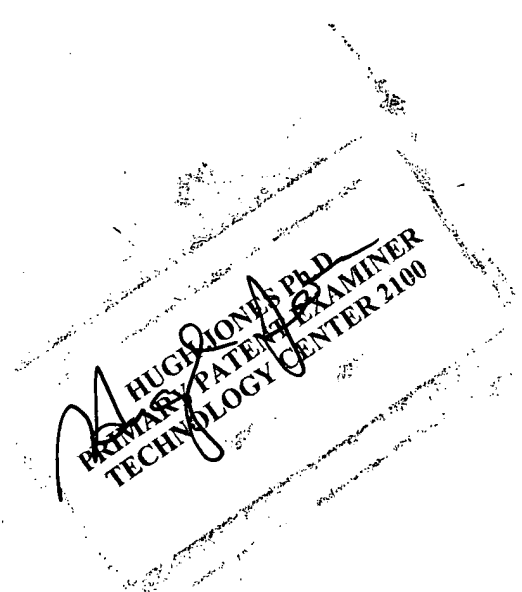
Commissioner of Patents and Trademarks  
Washington, D.C. 20231

**or faxed to:**

(703) 308-9051 (for formal communications intended for entry)

**or** (703) 308-1396 (for informal or draft communications, please label *PROPOSED* or *DRAFT*).




Dr. Hugh Jones  
Primary Patent Examiner  
December 9, 2007
































Art Unit: 2128

- ④ Results (page 1): +metacognition and +zachary
- ④ Results (page 1): +cognet
- ④ Advanced Search
- ④ ACM Digital Library
- ④ dl.cfm
- ④ ScienceDirect - All Sources Search - Enhanced Form (F
- ④ ScienceDirect - Search Results: (FULL-TEXT(zachary))
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